SERVICE MANUAL 115B

marantz

model 115B

Fm / Am

Stereophonic Tuner

marantz

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LIST OF ILLUSTRATIONS

1. INTRODUCTION

This service manual was prepared for use by Authorized Warranty Stations and contains service information for Marantz Model 115B Stereophonic Tuner.

Servicing information and voltage data included in this manual are intended for use by the knowledgeable and experienced technician only. All instruction should be read carefully. No attempt should be made to proceed without a good understanding of the operation in the receiver.

The parts list furnish information by which replacement part may be ordered from the Marantz Company. A simple description is included for parts which can be usually be obtained through local suppliers.

The Model 115B is a tuner version of the Marantz's Model 4270 Tuner/Amplifier and almost the same circuitry as used in the Model 4270 is employed except the audio Amplifier, and power supply circuit.

2. AM TUNER

The AM TUNER portion of the 115B is composed of one IC circuit (including RF amplifier, local oscillator, mixer, IF amplifier, detector, and a signal strength indicator amplifier) and one transistor amplifier to amplify the detected audio signals.

All components except Tuning capacitor and ferrite bar antenna are mounted on a printed circuit board P150.

The AM signals induced in a ferrite bar antenna are applied to the input of RF amplifier (Pin①) through a capacitor of C151 and amplified to the level required for overcoming the conversion noises, thus giving good S/N performance. The tuned circuits inserted in both output and input circuit of RF amplifier assure very high image and spurious rejection performance.

Thus amplified and selected AM signals are then applied to one input of Mixer section (Pin⑥) through a coupling capacitor C158. While the local oscillator voltage is injected to the other input of the section (Pin⑤) through a capacitor C157. Then both AM signals and oscillating voltage are mixed and converted into 455KHz intermediate frequency. The resulting IF signal is applied to the first IF transformer L153 consisting of one ceramic filter and two tuned circuits.

The output of L153 is led to the IF amplifier's input (Pin⑦) through a coupling capacitor C169 and amplified to the sufficient level to drive the detector. The output of IF amplifier (Pin ⑧) is led to the detector's input (Pin ⑫) through IF filter L154. The detected audio signal derived from pin is filtered and amplified and final audio output is obtained from the collector of H152 and applied to the output jacks through the function switch and OUTPUT LEVEL controler R005 and output amplifier H401 and H402.

The DC component of the detected IF signal is used as a AGC voltage to control emitter current of RF and IF amplifier through the resistor R154 and R155. A part of the DC component is also applied to the signal strength indication amplifier incorporated in the IC. The output appears at pin ⑭ and is level adjusted by R152, indicated on the signal strength meter M002.

2.1 Suggestions for AM Tuner trouble shooting

Check for broken AM bar antenna, next try to tune station by rotating fly-wheel tuning knob slowly and observe the AM signal strength meter whether it deflects or not. If the signal strength meter gives a deflection at several frequencies received, no failure may exist in the stages at least preceding final IF transformer L154. Next connect a oscilloscope to the test point Ⓑ or J157 and check for audio signals with the tuning meter deflected. If the signal strength meter does not deflect, check the local oscillator circuit. Normal oscillating voltage at the hot end of the oscillator tuning capacitor is about 1.5 or 3 volts, varying with tuning capacitor position. When measuring oscillating voltage use a RF VTVM, no circuit tester gives correct indication. If the local oscillator voltage is normal, check all voltage distribution in the AM circuits by using a DC VTVM and compare the measured values with those given in the schematic diagram.

3. FM TUNER

The FM Tuner section of Model 115B is divided into four functional blocks: FM Front End, IF Amplifier and Detector, Muting Control and MPX Stereo Decoding Circuit.

FM signals induced by a FM antenna are led to FM antenna coil L101 through an attenuator switch and a balun coil. These signals are then applied to the FET RF amplifier which in turn applies its output to the next FET Mixer H102 through the double tuned high selective circuits. The FET Mixer convert its input signal into 10.7MHz intermediate frequency and amplifies it at the same time. The H103 is a local oscillator and its output is injected into the source of the FET Mixer, the injection voltage is about 700mV. The 10.7MHz front end output is led to the next IF amplifier unit through a coaxial cable.

The IF amplifier unit consists of five stages of IF amplifier and one stage of AGC amplifier. Three pieces of dual elements ceramic filters are also used to obtain high selectivity, four stages of symmetrical diode limiters are also employed for the best limiting characteristics, improved capture ratio and good AM suppression.

A part of FM Front End output is applied to the AGC amplifier H201 and rectified its outupt is fed back to the gate of FET RF amplifier to decrease the gain with increased signal strength.

The IF signal sufficiently amplified through every stage of IF amplifier is finally applied to the detector amplifier. The detected audio output is led to the buffer amplifier H208 and its buffered output is led to; (a) noise amplifier H310 through resistor R378 and capacitor C333, (b) Quadradial Jack on the rear panel through resistor R379, (c) MPX stereo decoding IC (H321) through R301 and H301.

3.1 Audio Muting and Stereo mode auto-selecting circuit

The muting circuit consisting of all solid-state electrical switching has been incorporated in the Model 115B. Three inputs control the muting function. The first is related to signal strength, the second to the noise condition at the detector and the third is derived from the DC component of the detector output. These inputs are properly matrixed and gated to provide muting free from noise and transients.

The first input of DC voltage obtained by rectifying a part of IF output signal from the H205 and H206 is applied to the base of H308 and turns on it, if the IF output is greater than predetermined level (muting threshold level). When the H308 is turned on the H309 is turned off, allowing the emitter-collector resistance increasing and the collector voltage rises about 9V. The increased collector voltage increases the gate bias voltage and turns on the switching FET H301, decreasing the source-drain resistance to near zero ohm and allowing the audio signal applied to the source to flow to the pin ② of decoding IC through the source-drain path.

When the input signal is lower than predetermined level, the DC output obtained is small and can not turn on the H308, thus the H308 keeps its turn-off stage and this makes H309 turn on, decreasing the collector voltage and turning off H301. Thus no audio signals can pass through the FET. This is the fundamental principle of the muting operation but for more elaborate muting operation the second and the third inputs are necessary.

The second input is used to protect the muting operation and MPX stereo beacon lamps from misoperation due to undesirable noises. The high frequency noises included in the detected audio signals are separated by a small capacitor C333 and amplified by the noise amplifier transistor H310 and its output is rectified by the two diodes. The rectified DC output is proportional to the noise components in the audio signals.

When there are excessive noises in the audio signals such as obtained with a station incorrectly tuned in, the rectified DC output turns on the transistor H311, decreasing the emitter-collector resistance to zero. This means the collector of H309 is short-circuited to the ground, therefore the H301 is turned off and any audio signals having excessive high frequency noises can not go through the FET's source-drain path.

The transistor H317 also turns off when the transistor H309 or H311 turns on, and makes the transistor H303 turn on, which is connected to pin ⑧ on the MPX decoding IC. Therefore, pin

⑧ is equivalently grounded, and the operation of the IC becomes monaural. This permits misoperation of stereo due to undesirable noises during deviation of tuning.

The third input is obtained from the FM discriminator circuit. The DC output so called "S" curve is applied to the gate of H312 through a resistor R273 and deviding network (R361 & R362). The DC output is zero with a station correctly tuned in, but will vary from negative to positive values or vice versa when the tuning point is deviated toward either plus or minus frequency from the correct tuning frequency.

When the DC output is increased to a greater level than that of predetermined, the increased source potential of H312 makes the transistor H315 turn on (this means the collector of H309 is short-circuited to the ground), ... H301 turn off, ... H317 turn off, ... H303 turn on, this means the MPX Stereo Decoding IC is grounded at pin ⑧ and operates in the monaural mode of operation, and the stereo indicator lamp does not light. When the DC output is increased to the negative predetermined level, the decreased source potential turns off the H313 which in turn makes the H314 turn on (this means the collector of H309 is short-circuited to the ground). The subsequent changes are exactly the same as that just described above.

Thus when the tuning is shifted or deviated to the certain frequencies in which undesirable noisy side-audio signals are produced, both muting and monaural/stereo Switching Transistor H303 are operated automatically and open the circuits.

With the station correctly tuned in, the bias current of the FET H312 is adjusted so that both transistor H314 and H315 are not turned on, giving no effect on the transistor H308.

3.2 MPX Stereo Decoding Circuit

The stereo composite signal from the buffer amplifier undergoes a phase compensation by R301 and C301, is applied through the muting switching FET H301 to the input terminal pin ② , of the MPX stereo decoding IC H321 on a PLL (Phase Locked Loop) basis, and decoded into the left and right stereo signals, which become available at pins ④ and ⑤ respectively. These decoded left and right stereo audio signals are introduced through a low pass filter composed of L301 to L304 and C311 to C320 for elimination of undesirable residual switching signal and through a de-emphasis network consisting of R325, R326, C321 and C322, into the npn-pnp direct coupled audio amplifier, where the signals are amplified to a required level for the output from J311 and J313. From these jacks, the audio signals are further led through the function switch and OUTPUT LEVEL control R005 into the output amplifiers H401 and H402, where the signals are amplified to be fed to the output terminals. Figure 1 presents an internal block diagram showing the functions of the PLL basis MPX stereo decoding IC HA1156. The input stereo composite signal, amplified by the audio amplifier, is delivered to the phase detectors PD-1 and PD-2. A part of the stereo composite signal is also applied to the stereo decoder section. The VCO (Voltage Control Oscillator) produces a free run oscillation in the neighborhood of 76KHz with the time constant determined by a capacitor C305 and resistors R311 and R312 set on the outside of pin ⑭ . The VCO output has its frequency divided into 19KHz through the two stages of the frequency divider (DIV-1 & DIV-2), and is reverted to the phase detector PD-1, which contains two input terminals designed to produce an output in proportion to the product of the two input signals. The signal applied to one of the inputs of PD-1 is the 19KHz square wave formed through frequency division of the 76KHz VCO output signal by the two stages of the frequency divider DIV-1 and DIV-2, and the 19KHz pilot signal included in the stereo composite signal as a reference signal is applied to the other input. Therefore, the output of PD-1 which has passed through the low pass filter LPF-1 provides DC output voltage in proportion to the phase variance between the two inputs. This DC output voltage is amplified by the DC amplifier, and supplied to the 76KHz VCO as a control voltage. This means that the output frequency and phase of the VCO have been phase-locked to the input pilot signal. The 38KHz sub-carrier reproduced by PLL as stated above is delivered through the stereo switch to the stereo decoder section as a switching signal, thus driving the decoder section. One of the inputs of PD-2 is given the 19KHz resulting from the frequency division completed by DIV-1 and

DIV-3, whereas the other input gets the 19KHz output contained in the composite signal, and the output is provided with a DC output in proportion to the amplitude of the pilot signal. This DC output is furnished through LPF-2 to the trigger amplifier which drives the stereo indicator lamp and stereo switch. Therefore, insufficient supply of the pilot signal results in failure to light the stereo indicator and to turn on the stereo switch located in the path of the 38KHz switching signal, thereby avoiding a wrong stereo operation. H303 attached on the outside of pin ⑧ is a switching transistor for automatic monaural-stereo switchover. When the intensity of an incoming signal from an FM station is weaker than a predetermined level, this H303 is turned on and pin ⑧ is grounded, thereby developing a condition for monaural reception. For a forced monaural operation, switch the MODE switch to "MONO," and H303 comes into an "On" condition with the positive bias voltage applied to the base, and pin ⑧ is grounded, thereby establishing monaural opeartion. The transistor H302 connected externally to pin ⑭ is intended to stop the 76KHz oscillation of the VCO which interferes an AM signal during the reception of an AM station. When the function switch is set to "AM" position, a positive bias is charged on the base of H302, H302 is turned on, and pin ⑭ is grounded. Thus, the oscillation of the VCO is stopped, ending the interference with AM reception.

3.3 Suggestion for Trouble Shooting of FM Tuner

3.3.1 Symptom: No FM Reception

First turn on the Power switch and try to tune FM stations. Rotate the fly-wheel tuning knob slowly and observe the FM signal strength meter. If the signal strength meter deflect at several frequencies received, the tuner circuits preceding the discriminator circuit may have no failure. When no reading is obtained in the meter, check FM local oscillator circuit, using a RF VTVM. The normal local oscillator voltage is one or two volts (rms) at the tuning capacitor, depending on the tuning capacitor position. If the local oscillator voltage is normal, next check all voltage distribution in the FM Front End and IF amplifier unit and compare them with those shown in the circuit diagram. When signal strength meter deflects but no sound is obtained, check audio circuit, using high sensitive oscilloscope.

3.3.2 Symptom: No Stereo Separation

First check the "MONO" switch is in normal out position. Connect a FM RF signal generator output modulated by a stereo modulator to the rear FM antenna terminals, and check the stereo beacon is turned on or not. If not turned on, check for 19KHz VCO output signal (J310), using an oscilloscope and a frequency counter.

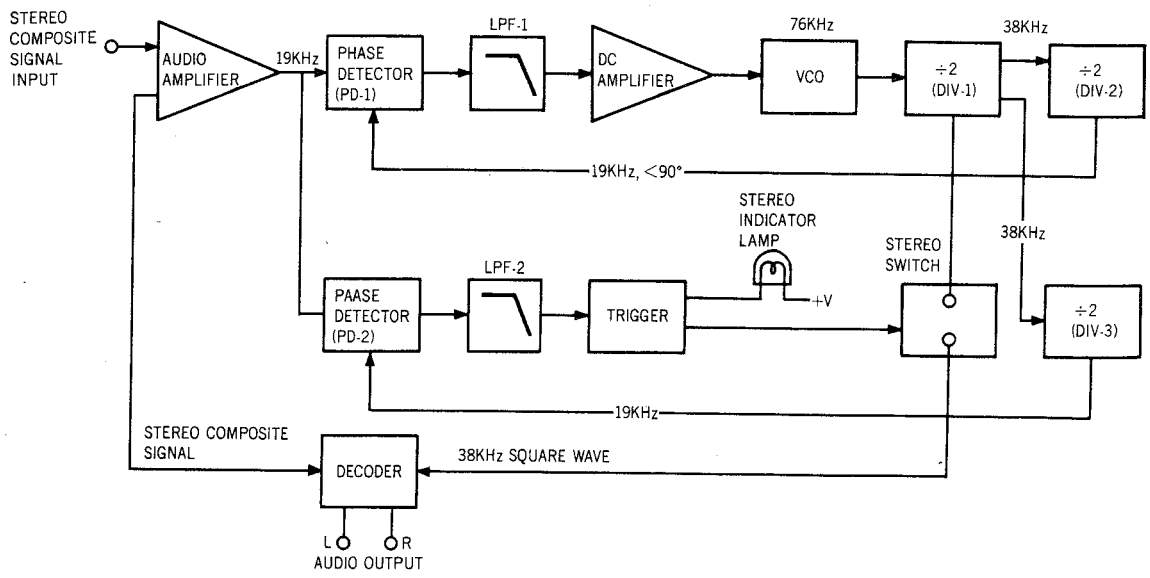


Figure 1. Block Diagram of the HA1156

4. AM ALIGNMENT PROCEDURE

4.1 AM IF Alignment

1. Connect a sweep generator to the J153 and an alignment scope to the test point Ⓑ.
2. Rotate each core of IF transformer L153 and L154 for maximum height and flat top symmetrical response.

4.2 AM Frequency Range and Tracking Alignment

1. Set AM signal generator to 525KHz. Turn the tuning capacitor fully closed (place the tuning pointer at the low end.) and adjust the oscillator coil L152 for maximum audio output.
2. Set the signal generator to 1650KHz. Place the tuning pointer in the high frequency end and adjust the oscillator trimmer on the oscillator tuning capacitor for maximum audio output.
3. Repeat the step 1 and 2 until no further adjustment is necessary.
4. Set the generator to 600KHz and tune the receiver to the same frequency and adjust a slug core of AM ferrite rod antenna and RF coil L151 for maximum output.
5. Set the generator to 1400KHz and tune the receiver to the same frequency and adjust both trimming capacitors of Antenna and RF tuned circuit for maximum output.
6. Repeat the step 4 and 5 until no further adjustment is necessary.

Note: During tracking alignment reduce the signal generator output as necessary to avoid AGC action.

4.3 AM Signal Strength Meter Adjustment

Set the AM signal generator to 1000KHz with 74dB/M, and adjust R152 so that the signal strength meter may read 80%.

5. FM ALIGNMENT PROCEDURE

1. Connect a FM signal generator to the FM antenna terminals and a oscilloscope and an audio distortion analyzer to the tape output jacks on the rear panel.
2. Set the FM SG to 87.5MHz and provide about 3 to 5μV. Place the tuning pointer at the low frequency end by rotating the tuning knob and adjust the core of oscillator coil L104 to obtain maximum audio output.
3. Set the FM SG to 108.5MHz and provide about 3 to 5μV output. Rotate the tuning knob and place the tuning pointer at the high frequency end and adjust the trimming capacitor C106 for Maximum output.
4. Repeat the step 2 and 3 until no further adjustment is necessary.
5. Set the FM SG to 90MHz and tune the receiver to the same frequency. Decrease signal generator output until the audio output level decreases with the decreasing generator output. Adjust the antenna coil L101, RF coil L102 and L103 IF transformer L105 for minimum audio distortion.
6. Set the FM SG to 106MHz and tune the receiver to the same frequency. Adjust the trimming capacitor C102, C104 and C105 for minimum distortion.
7. Adjust the secondary core (upper) of discriminator transformer L201 so that the center tuning meter pointer indicates its center at no signal applied. Set the FM SG to 98MHz and increase its output level to 1KμV and tune the receiver to the same frequency so that the center tuning meter pointer indicates its center. Adjust the primary core (lower) of L201 for minimum distortion.
8. Set the FM SG to 98MHz with 100KμV, and adjust R374 so that the signal strength meter may read 90%.

5.1 Stereo Separation Alignment

1. Set the FM SG to provide 1KμV at 98MHz. Tune the receiver to the same frequency so that the center tuning meter pointer indicates its center. Then turn off the modulation of the FM SG, connect a frequency counter to test point J310 (point Ⓒ) and adjust R311 so that the frequency counter may a precisely read 19KHz.

2. Modulate the FM SG with stereo composite signal consisting of only L or R channel (of course a pilot signal must be included).
3. Adjust the trimming resistor R301 for maximum and same separation in both channels.

5.2 Muting Circuit Alignment

1. Connect a VTVM across the resistor R363 and adjust the resistor R363 until the meter reads 0.75V DC at no signal.
2. Set the FM SG to provide 1KμV at 98MHz and tune the receiver to the same frequency correctly.
3. Turn on MUTING push-switch. Shift the FM signal generator frequency to plus and minus and note both plus and minus shifted frequencies at which undesirable audio side responses are muted out. Adjust the R363 so that the same shifted frequencies mute the undesirable side response.
4. Adjust R362 for preferred frequency shift at which the muting circuit operates.

6. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 115B Tuner.

Item	Manufacturer and Model No.	Use
AM Signal Generator		Signal source for AM alignment.
Test Loop		Used with AM Signal generator.
FM Signal Generator	Less than 0.3% distortion.	Signal source for FM alignment.
Stereo Modulator	Less than 0.3% distortion.	Stereo separation alignment and trouble shooting.
Frequency Counter		MPX oscillator Adjustment (VCO).
Audio Oscillator	Weston Model CVO-100P, less than 0.02% residual distortion is required.	Sinewave and squarewaves signal source.
Oscilloscope	High sensitivity with DC horizontal and vertical amplifiers.	Waveform analysis and trouble shooting.
VTVM	With AC, DC, RF range.	Voltage measurements.
Circuit Tester		Trouble shooting.

Table 1. Test Equipment Required for Servicing

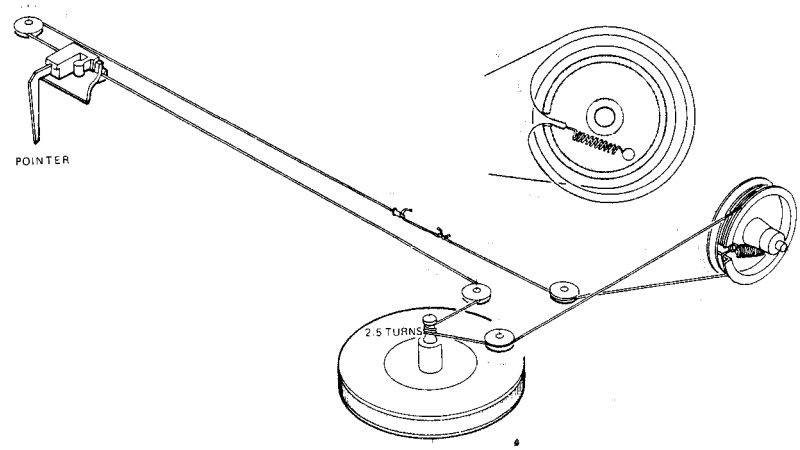


Figure 2. Dial Stringing

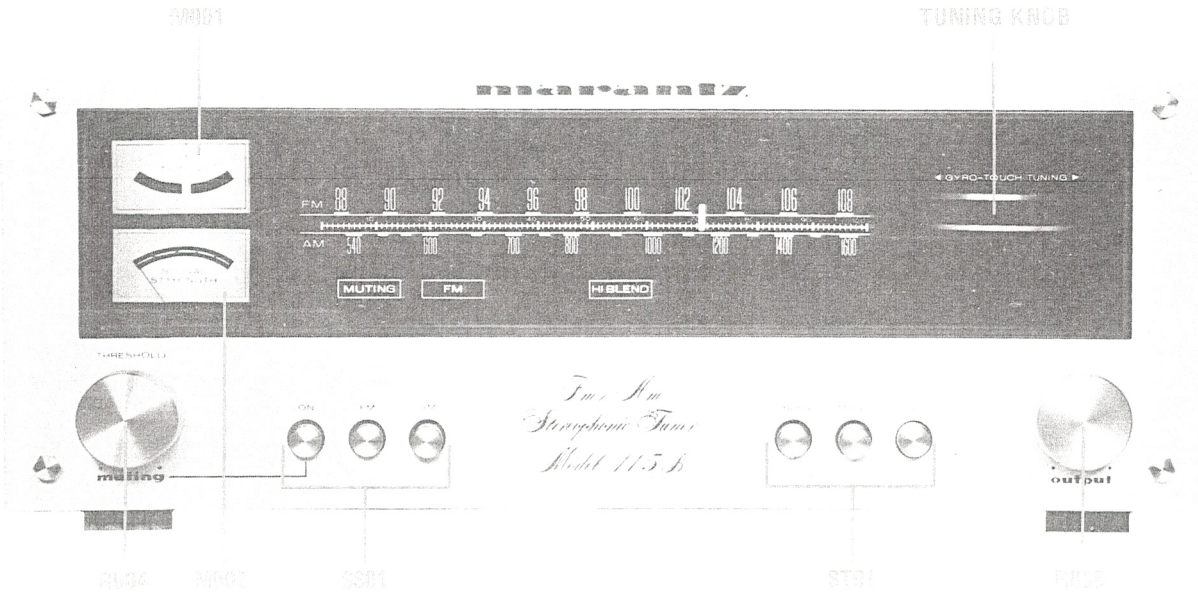


Figure 3. Front Panel Adjustment and Component Locations

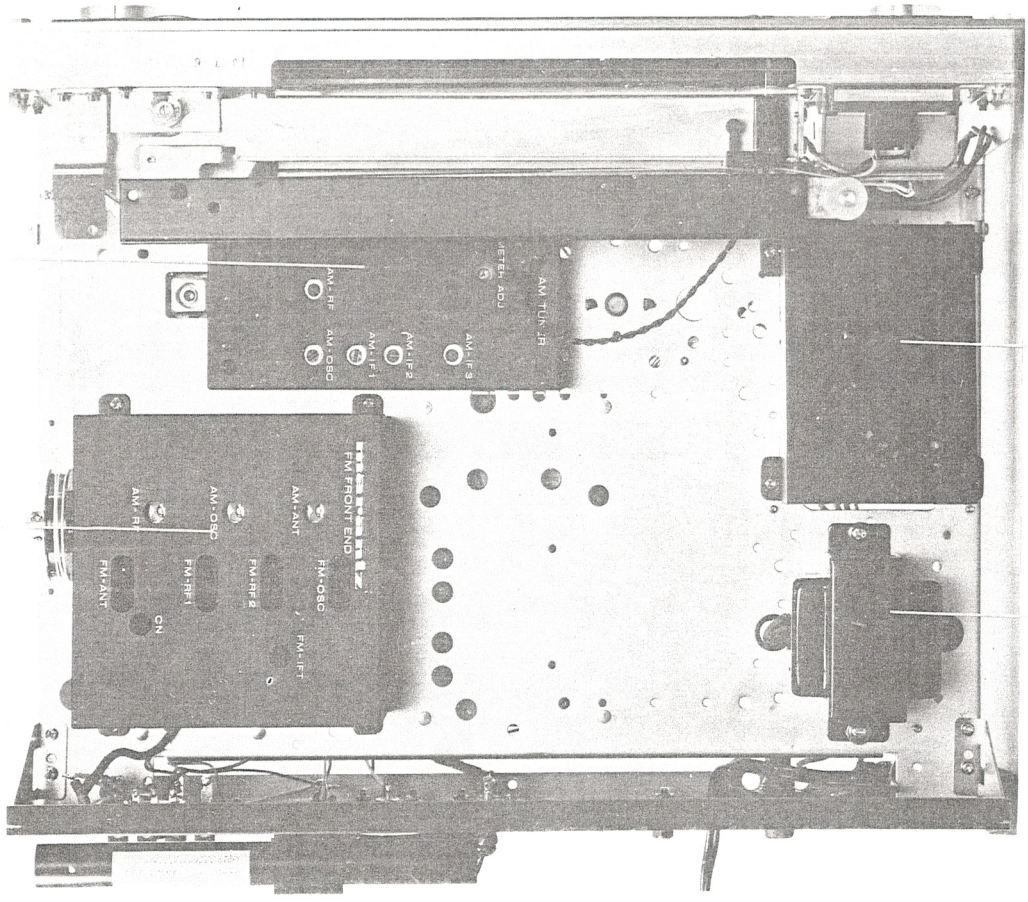
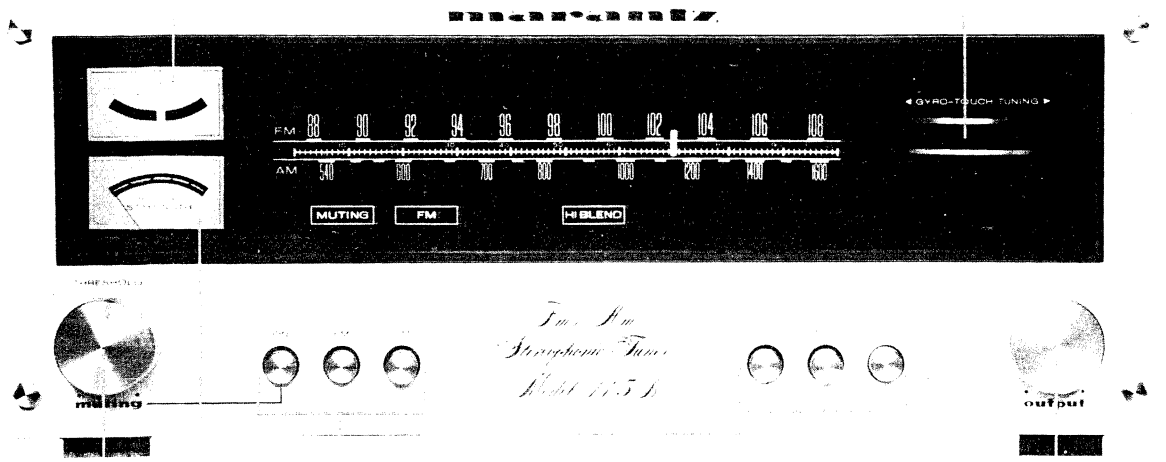


Figure 4. Main Chassis Component Locations (Top View)



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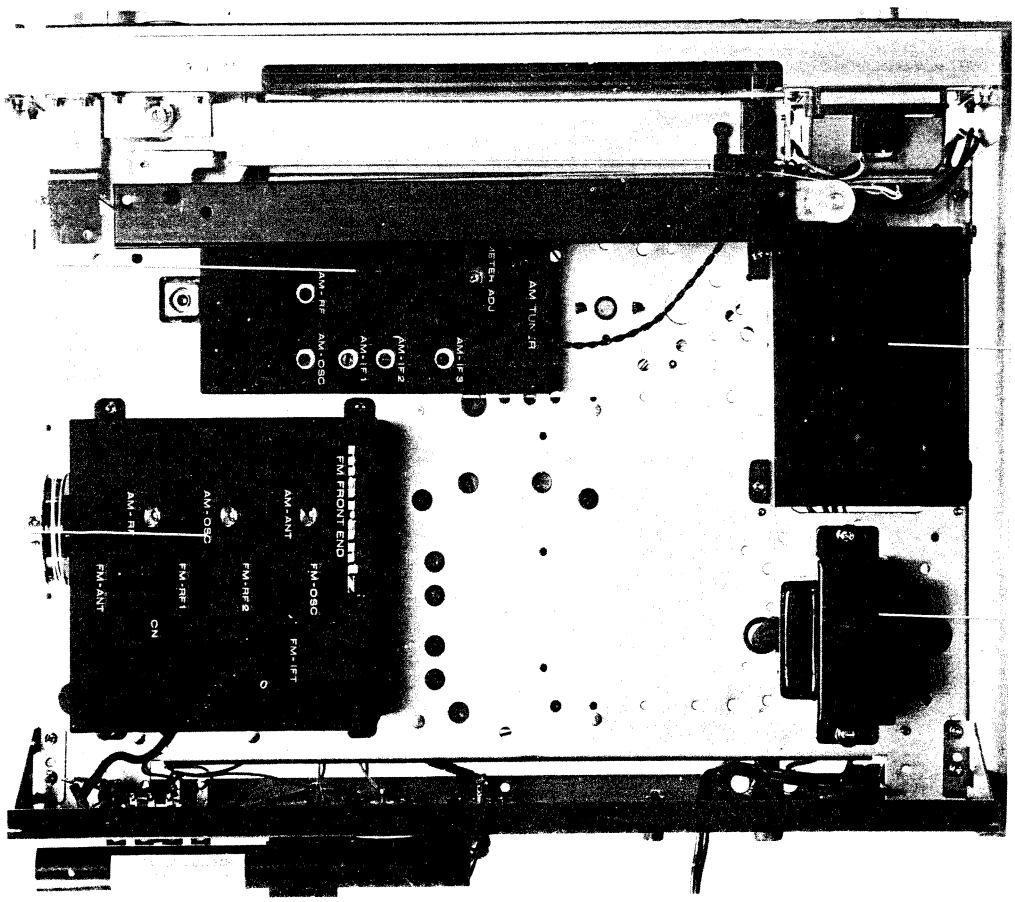

Figure 4. Main Chassis Component Locations (Top View)

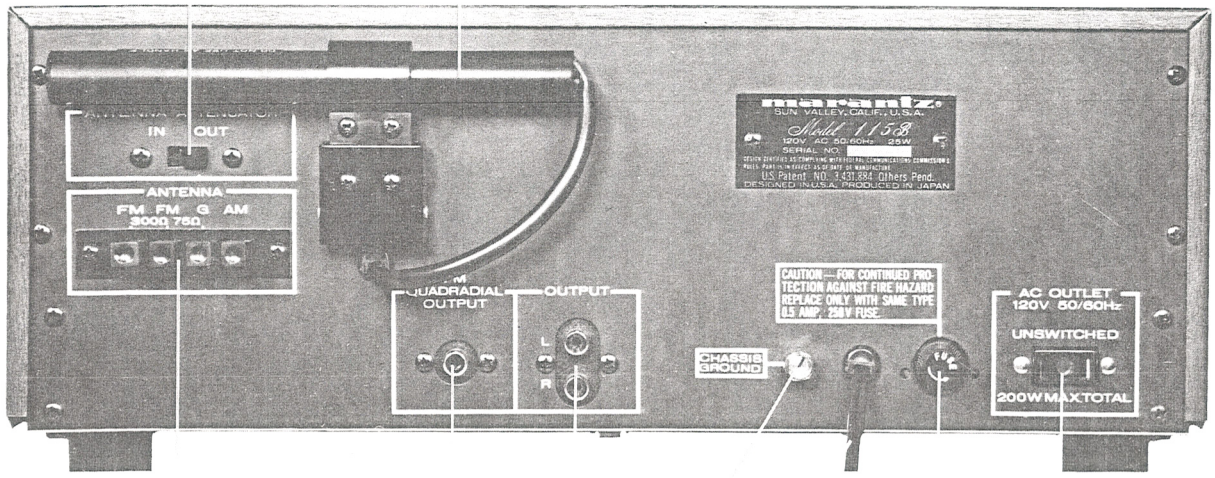

Figure 5. Rear Panel Adjustment and Component Locations

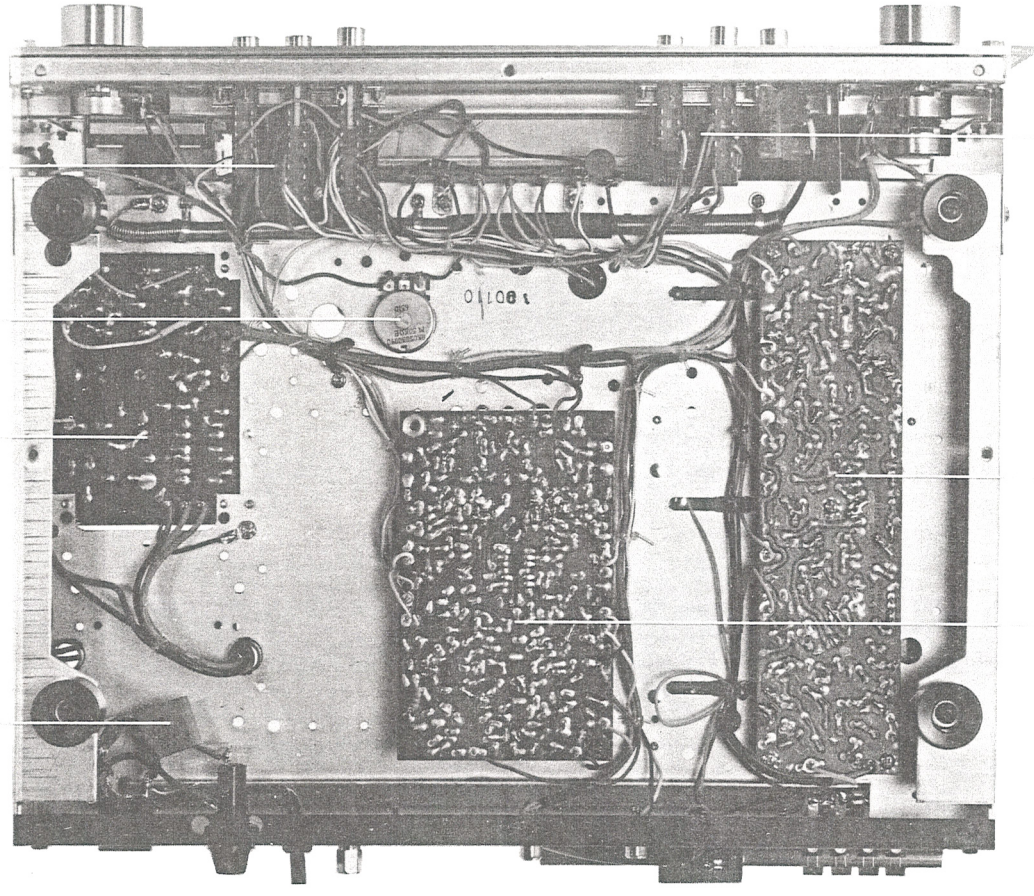

Figure 6. Main Chassis Component Locations (Bottom View)

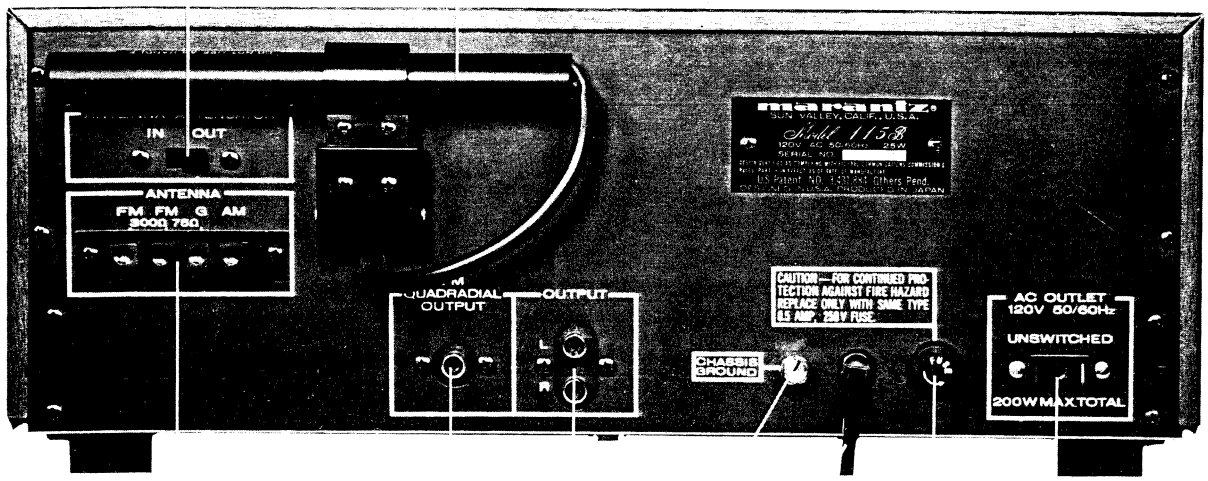

Figure 5. Rear Panel Adjustment and Component Locations

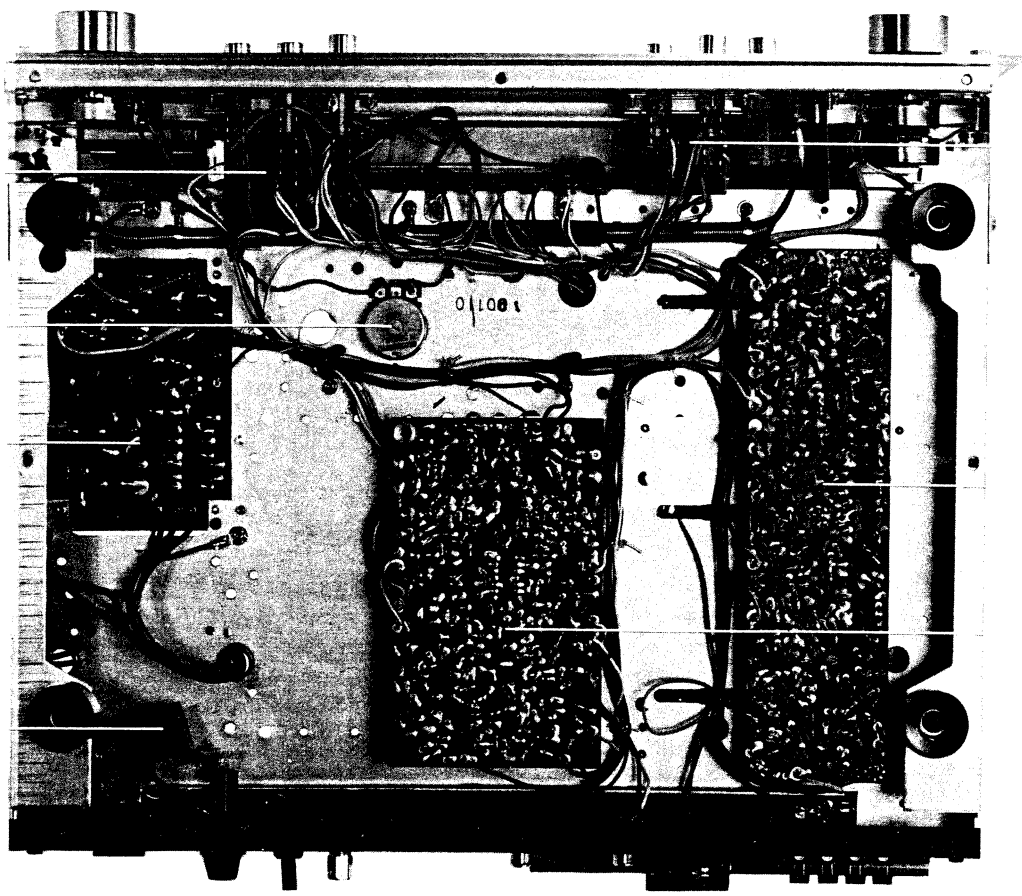

Figure 6. Main Chassis Component Locations (Bottom View)

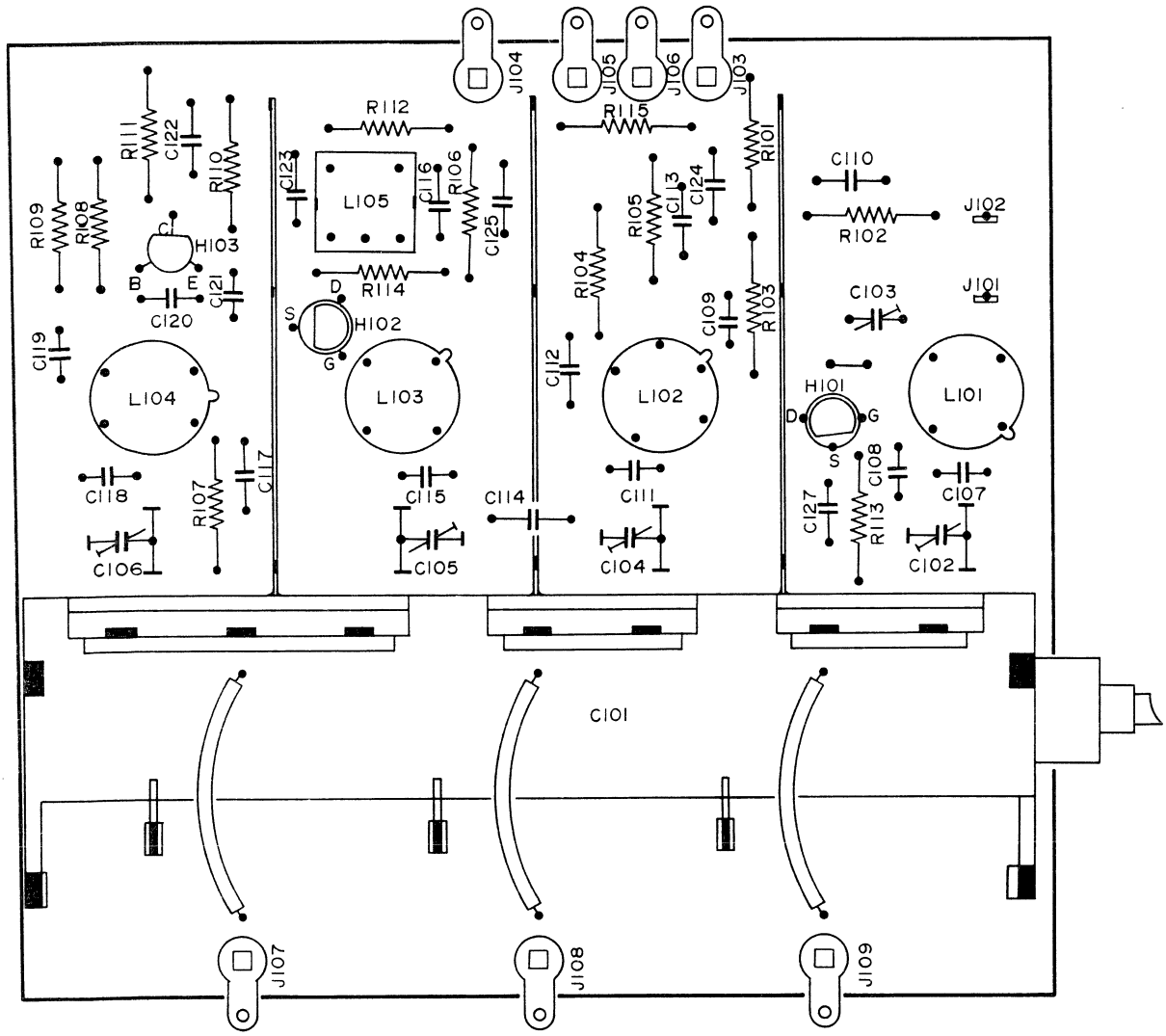

Figure 7. FM Front End Assembly P100 Component Locations

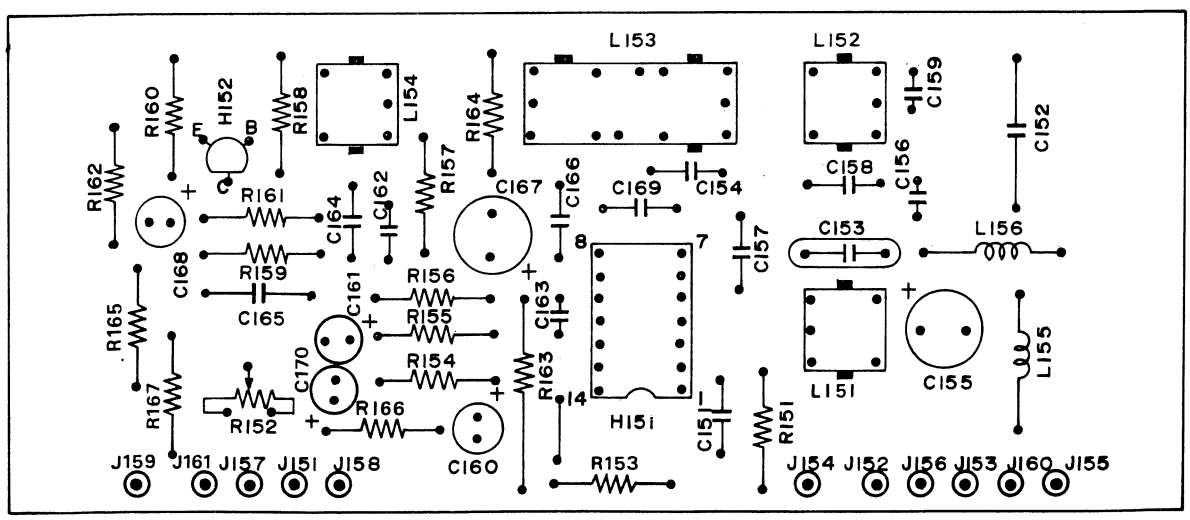

Figure 8. AM Tuner Unit Assembly P150 Component Locations

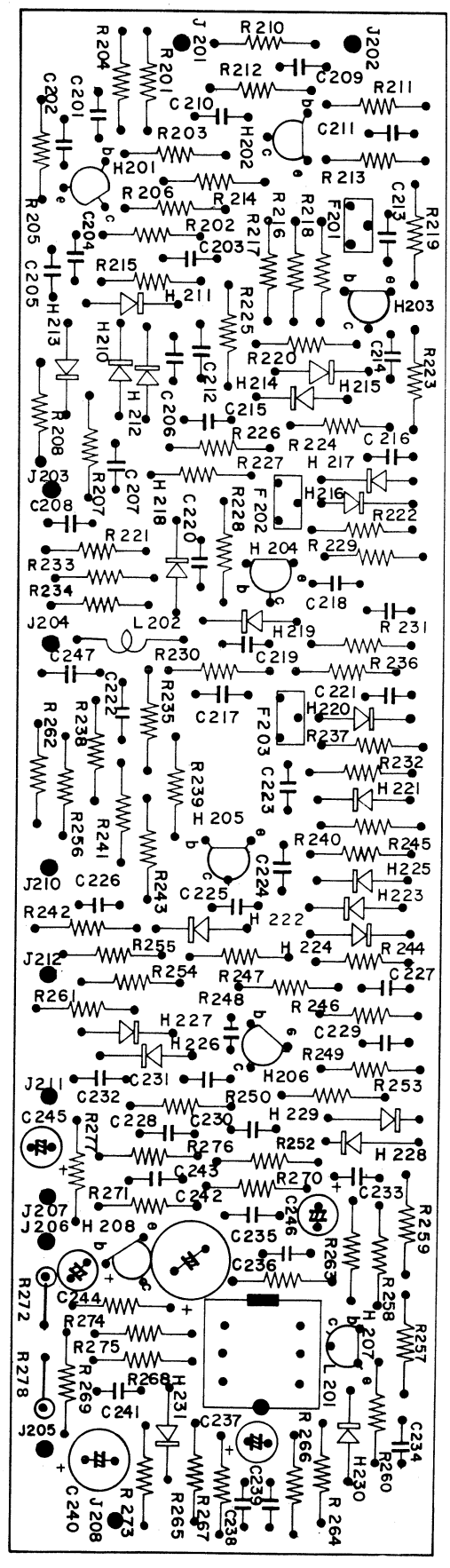

Figure 9. FM IF Amplifier Assembly P200 Component Locations

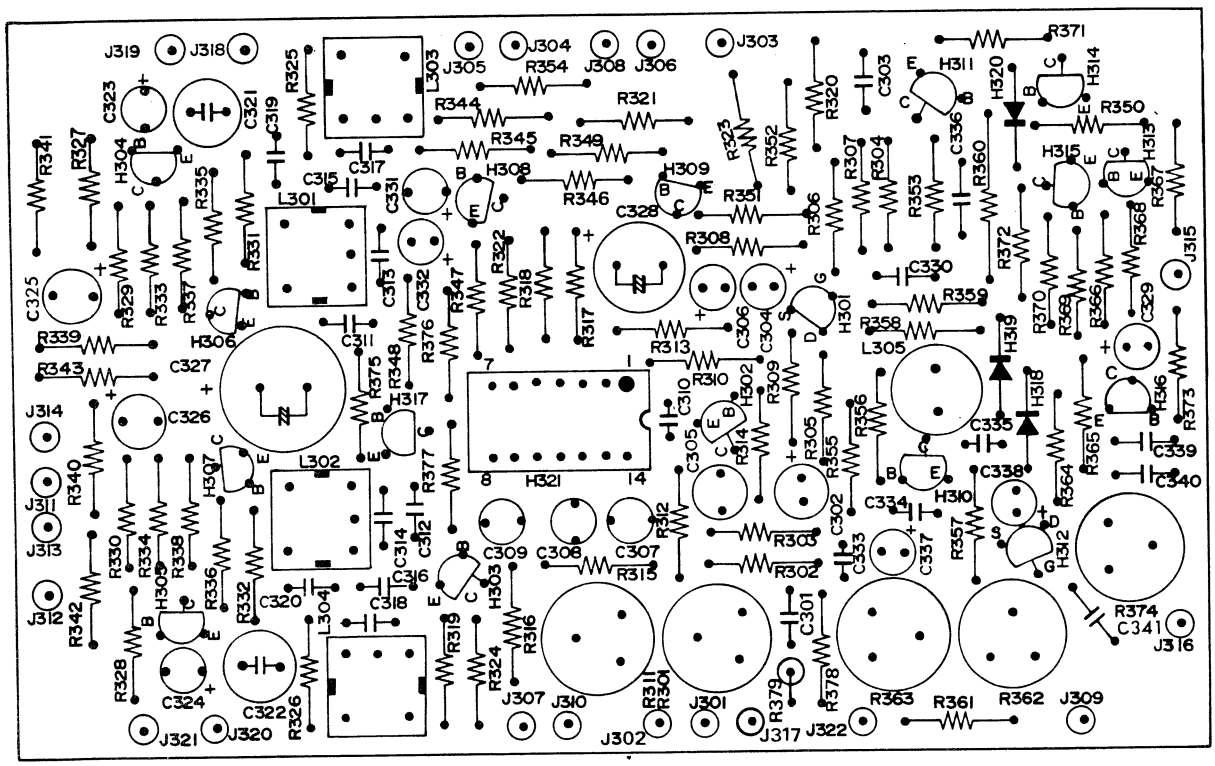

Figure 10. FM MPX Stereo Decoding and Noise DC Amplifier Assembly P300 Component Locations

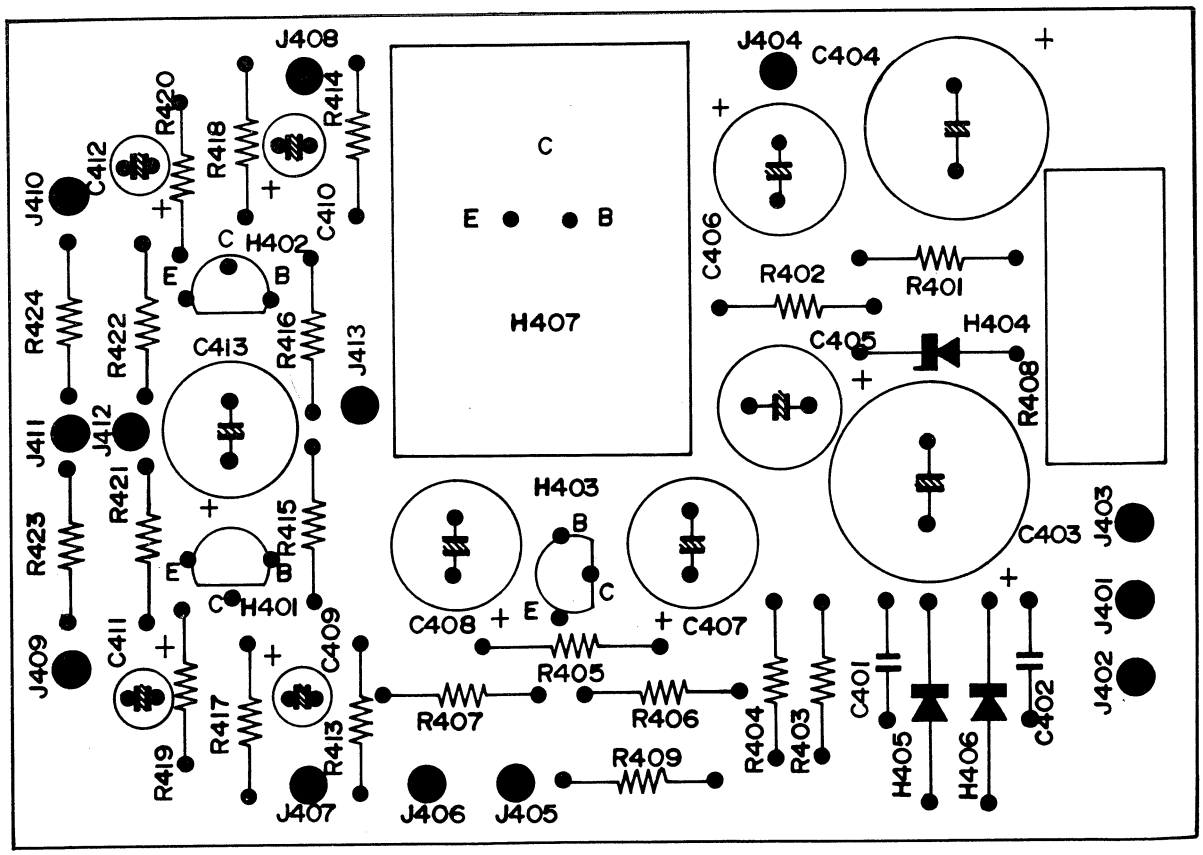

Figure 11. Power Supply Unit Assembly P400 Component Locations

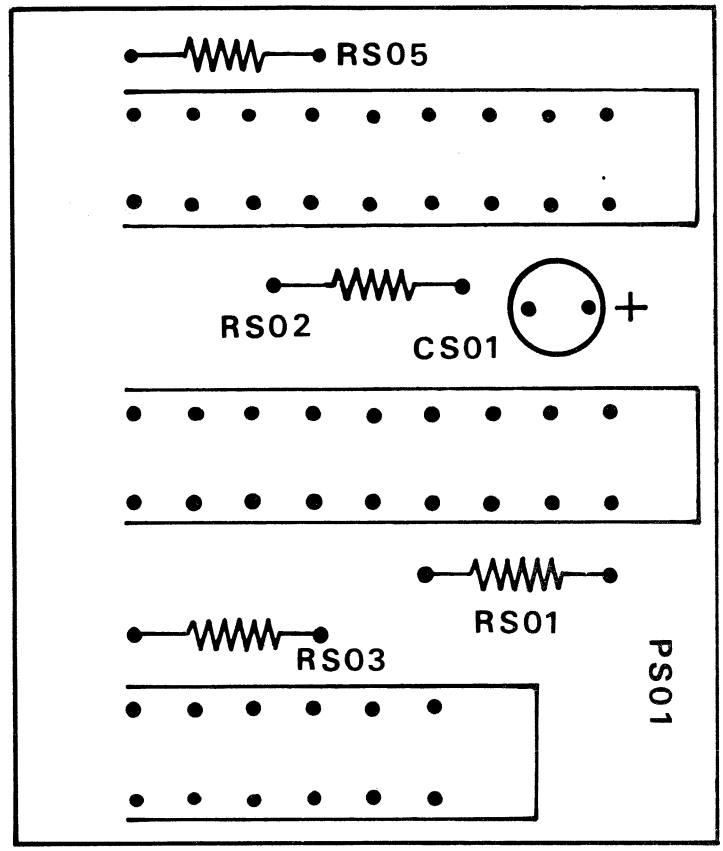

Figure 12. Selector Push Switch Assembly PS01 Component Locations

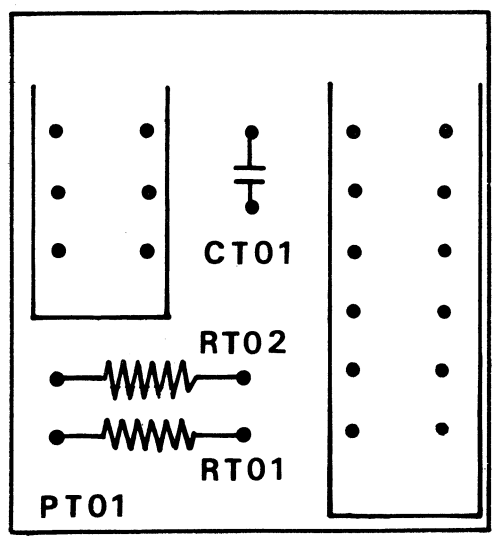

Figure 13. Mono Push Switch Assembly PT01 Component Locations

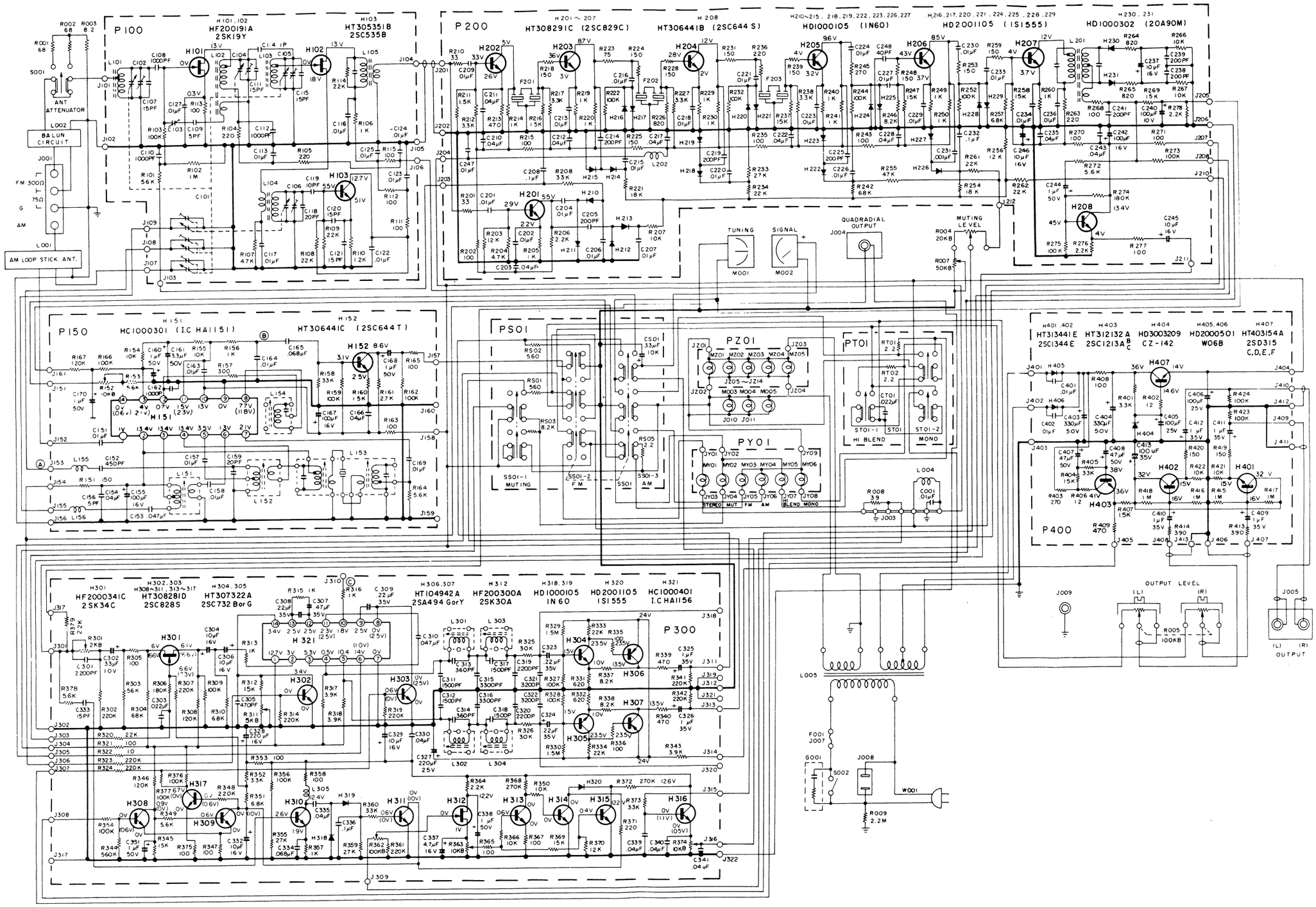

Figure 14. Schematic Diagram

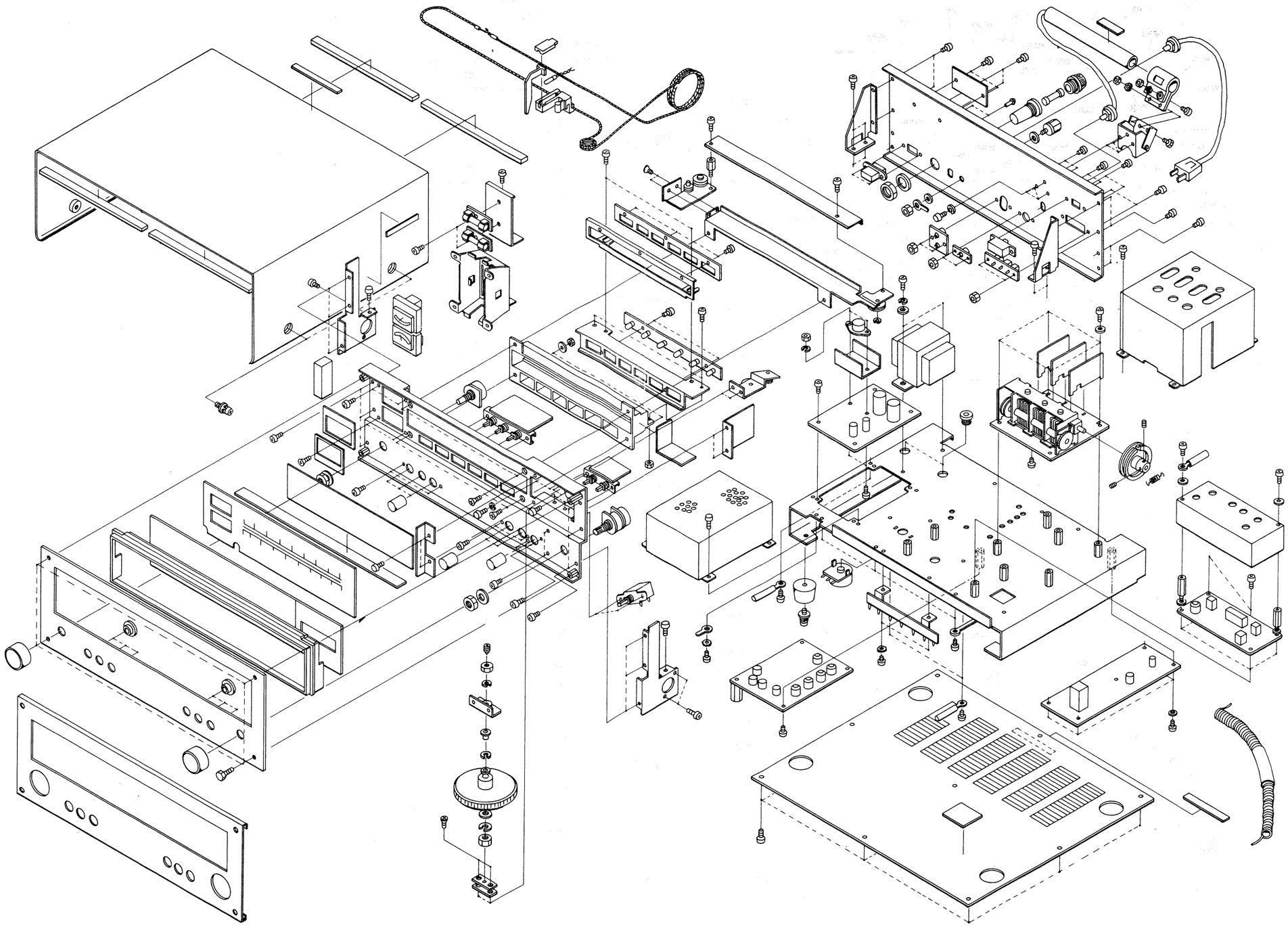

Figure 15. Exploded Mechanical Diagram

7. PARTS LIST

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
A	288406340	Front Panel Assembly, For U.S.A.
0103	288406301	Escutcheon
0104	285540101	Frame
0105	288415801	Window
0106	281825905	Bush x 6
0107	288405301	Cover
A1	288406341	Front Panel Assembly, For CANADA
0103	288406301	Escutcheon
0104	285540101	Frame
0105	288415801	Window
0106	281825905	Bush x 6
B	282610341	Pointer Assembly
0527	281810301	Pointer
0528	282610301	Pointer
0529	281805301	Cover
M005	IN1008030	Lamp
C	120200640	String Assembly
0532	72080802A	String
0533	120225801	Hook
D	285227340	Fly Wheel Assembly
0604	257706302	Escutcheon x 2
0605	257727301	Fly Wheel
0606	285211201	Shaft
0610	53110603E	Hexagon Nut
0611	54040602N	Spring
0612	54020601E	Flat Washer P
E	281915940	Drum Assembly
1004	281915901	Drum
1005	71101569M	Spring
1006	51650304D	Set Screw x 2
F	285216040	Rear Panel Assembly
0803	285216001	Bracket
0912	55060365S	T.R. Rivet x 2
J008	YJ0400018	Socket
P100	YD2819002	P.W. Board, FM Front End
	ZZ2819002	P.W. Board Ass'y
		RESISTORS
		All resistors are ±5% and ¼W.
R101	RT0556314	56KΩ
R102	RT0510514	1MΩ
R103	RT0510414	100KΩ
R104	RT0522114	220Ω
R105	RT0522114	220Ω
R106	RT0510214	1KΩ
R107	RT0547214	47KΩ
R108	RT0522314	22KΩ
R109	RT0522314	22KΩ
R110	RT0512214	1.2KΩ
R111	RT0510114	100Ω
R112	RT0510114	100Ω
R113	RT0510114	100Ω
R114	RT0522314	22KΩ
R115	RT0510114	100Ω

REF. DESIG.	MARANZ PART NO.	DESCRIPTION
		CAPACITORS
C102	CT1100001	Trimming, 1.5~10PF
C103	CT1100002	Trimming, 1.5~10PF
C104	CT1100001	Trimming, 1.5~10PF
C105	CT1100001	Trimming, 1.5~10PF
C106	CT1100001	Trimming, 1.5~10PF
C107	DD1615001	Ceramic, 15PF ± 10%
C108	DK1710201	Ceramic, 1000PF ± 20%
C109	DD1105001	Ceramic, 5PF ± 0.5PF
C110	DK1710201	Ceramic, 1000PF ± 20%
C111	DD1615001	Ceramic, 15PF ± 10%
C112	DK1710201	Ceramic, 1000PF ± 20%
C113	DK1710301	Ceramic, 0.01μF ± 20%
C114	DD1001001	Ceramic, 1.0PF ± 0.25PF
C115	DD1615001	Ceramic, 15PF ± 10%
C116	DK1710301	Ceramic, 0.01μF ± 20%, YY
C117	DK1710301	Ceramic, 0.01μF ± 20%, YY
C118	DD1620003	Ceramic, 20PF ± 10%, SH
C119	DD1210006	Ceramic, 10PF ± 1PF, CH
C120	DD1615003	Ceramic, 15PF ± 10%, CH
C121	DD1615003	Ceramic, 15PF ± 10%, CH
C122	DK1710301	Ceramic, 0.01μF ± 20%, YY
C123	DK1710301	Ceramic, 0.01μF ± 20%, YY
C124	DK1710301	Ceramic, 0.01μF ± 20%, YY
C128	DK1710301	Ceramic, 0.01μF ± 20%, YY
C127	DK1710301	Ceramic, 0.01μF ± 20%, YY
		COILS & TRANSFORMER
L101	LA1202603	Ant Coil
L101	LA1203601	Ant Coil
L102	LA1202604	RF Coil
L103	LA1202605	RF Coil
L104	LO1202603	OSC Coil
L105	LI1001601	IFT
		MISCELLANEOUS
H101	HF200191A	Transistor, 2SK19Y
H102	HF200191A	Transistor, 2SK19Y
H103	HT305351B	Transistor, 2SC535B
J101	YP1000094	Plug
J102	YP1000094	Plug
J103	57271240W	Lug Eyelet
J104	57271240W	Lug Eyelet
J105	57271240W	Lug Eyelet
J106	57271240W	Lug Eyelet
J107	57271240W	Lug Eyelet
J108	57271240W	Lug Eyelet
J109	57271240W	Lug Eyelet
1016	273010903	Shield x 3
1011	281905102	Guide
1012	51060305E	P.H.M. Screw x 3
C101	CA4330001	Variable Cap.
P150	YD2890001	P.W. Board, AM Tuner
	ZZ2884101	P.W. Board Ass'y

REF. DESIG.	MARANZ PART NO.	DESCRIPTION
		RESISTORS
		All resistors are ± 5% and ¼W, unless otherwise indicated.
R151	RT0515114	150Ω
R152	RA0103025	10KΩ (B)
R153	RT0556214	5.6KΩ
R154	RT0510314	10KΩ
R155	RT0510314	10KΩ
R156	RT0510214	1KΩ
R157	RT0530114	300Ω
R158	RT0533314	33KΩ
R159	RT0510414	100KΩ
R160	RT0515214	1.5KΩ
R161	RT0527214	2.7KΩ
R162	RT0510414	100KΩ
R163	RT0510114	100Ω
R164	RT0556214	5.6KΩ
R165	RT0510114	100Ω
R166	RT0510414	100KΩ
R167	RT0512414	120KΩ
R168	RT0515214	1.5KΩ
		CAPACITORS
C151	DK 1710301	Ceramic, 0.01μF ± 20%
C152	DF6545101	Film, 450PF ± 5%
C153	DF1747305	Film, 0.047μF ± 20%
C154	DK 1840302	Ceramic, 0.04μF +80%, -20%
C155	EA 1070169	Electroly, 100μF, 16V
C157	DK 1710301	Electroly, 0.01μF ± 20%
C158	DK 1710301	Electroly, 0.01μF ± 20%
C159	DD 1620001	Electroly, 20PF ± 10%
C160	EA 1050509	Electroly, 1μF, 50V
C161	EA 3350509	Electroly, 3.3μF, 50V
C162	DK 1710201	Ceramic, 1000PF ± 20%
C163	DF 1710301	Film, 0.01μF ± 20%
C164	DK 1710301	Ceramic, 0.01μF ± 20%
C165	DF 1668305	Film, 0.068μF ± 10%
C166	DK 1840302	Ceramic, 0.04μF +80%, -20%
C167	EA 1070169	Electroly, 100μF, 16V
C168	EA 1050509	Electroly, 1μF, 50V
C169	DK 1710301	Ceramic, 0.01μF ± 20%
C170	EA 1050509	Electroly, 1μF, 50V
		SEMICONDUCTORS
H151	HC1000301	IC, IC HA1151
H152	HT306441C	Transistor, 2SC644T
		COILS & TRANSFORMERS
L151	LA1001017	RF Coil, AM RF
L152	LO1001048	OSC Coil, AM OSC
L153	LI1028002	IFT, AM Ceramic Fil.
L154	LI1001064	IFT, AM IFT
L155	LC1332002	Choke Coil, 3.3μH
L156	LC1332002	Choke Coil, 3.3μH
		MISCELLANEOUS
J151 ~ J158	YP1000113	Plug
J161	YP1000113	Plug
P200	YD2884006	P.W. Board, FM IF
	ZZ2884006	P.W. Board Ass'y

REF. DESIG.	MARANZ PART NO.	DESCRIPTION
		RESISTORS
		All resistors are ± 5% and ¼W.
R201	RT0533014	33Ω
R202	RT0510114	100Ω
R203	RT0512314	12Ω
R204	RT0547214	12KΩ
R205	RT0510214	1KΩ
R206	RT0522214	2.2KΩ
R207	RT0510314	10KΩ
R208	RT0533314	33KΩ
R210	RT0533014	150Ω
R211	RT0515214	1.5KΩ
R212	RT0533214	3.3KΩ
R213	RT0547114	470Ω
R214	RT0510214	1KΩ
R215	RT0510114	100Ω
R216	RT0515214	1.5KΩ
R217	RT0533214	3.3KΩ
R218	RT0515114	150Ω
R219	RT0510214	1KΩ
R220	RT0510214	1KΩ
R221	RT0518314	18KΩ
R222	RT0510414	100KΩ
R223	RT0575014	75Ω
R224	RT0515114	150Ω
R225	RT0515114	150Ω
R226	RT0582114	820Ω
R227	RT0533214	3.3KΩ
R228	RT0515114	150Ω
R229	RT0510214	1KΩ
R230	RT0510214	1KΩ
R231	RT0515114	150Ω
R232	RT0510414	100KΩ
R233	RT0527314	27KΩ
R234	RT0522314	22KΩ
R235	RT0510114	100Ω
R236	RT0522114	220Ω
R237	RT0515214	1.5KΩ
R238	RT0533214	3.3KΩ
R239	RT0515114	150Ω
R240	RT0510214	1KΩ
R241	RT0510214	1KΩ
R242	RT0568314	68KΩ
R243	RT0510114	100Ω
R244	RT0510414	100KΩ
R245	RT0527114	270Ω
R246	RT0582214	8.2KΩ
R247	RT0515314	15KΩ
R248	RT0515114	150Ω
R249	RT0510214	1KΩ
R250	RT0510214	1KΩ
R252	RT0510414	100KΩ
R253	RT0515114	150Ω
R254	RT0518314	18KΩ
R255	RT0547314	47KΩ
R256	RT0512314	12KΩ
R257	RT0568214	6.8KΩ
R258	RT0515314	15KΩ
R259	RT0515114	150Ω
R260	RT0510214	1KΩ
R261	RT0522314	22KΩ
R262	RT0522314	22KΩ

REF. DESIG.	MARANZ PART NO.	DESCRIPTION
R263	RT0522114	220Ω
R264	RT0582114	820Ω
R265	RT0582114	820Ω
R266	RT0510314	10KΩ
R267	RT0510314	10KΩ
R268	RT0510114	100Ω
R269	RT0515314	15KΩ
R270	RT0510114	100Ω
R271	RT0510114	100Ω
R272	RT0556214	5.6KΩ
R273	RT0510414	100KΩ
R274	RT0518414	180KΩ
R275	RT0510414	100KΩ
R276	RT0522214	2.2KΩ
R277	RT0510114	100Ω
R278	RT0522214	2.2KΩ
		CAPACITORS
C201	DK1710301	Ceramic, 0.01μF ± 20%
C202	DK1710301	Ceramic, 0.01μF ± 20%
C203	DK1840302	Ceramic, 0.04μF +80%, -20%
C204	DK1710301	Ceramic, 0.01μF ± 20%
C205	DD1620101	Ceramic, 200PF ± 10%
C206	DK1710301	Ceramic, 0.01μF ± 20%
C207	DK1710301	Ceramic, 0.01μF ± 20%
C208	DK1810402	Ceramic, 0.1μF +80%, -20%
C209	DK1710301	Ceramic, 0.01μF ± 20%
C210	DK1840302	Ceramic, 0.04μF +80%, -20%
C211	DK1840302	Ceramic, 0.04μF +80%, -20%
C212	DK1840302	Ceramic, 0.04μF +80%, -20%
C213	DK1710301	Ceramic, 0.01μF ± 20%
C214	DD1620101	Ceramic, 200PF ± 10%
C215	DK1710301	Ceramic, 0.01μF ± 20%
C216	DK1710301	Ceramic, 0.01μF ± 20%
C217	DK1840302	Ceramic, 0.04μF +80%, -0%
C218	DK1710301	Ceramic, 0.01μF ± 20%
C219	DD1620101	Ceramic, 200PF ± 10%
C220	DK1710301	Ceramic, 0.01μF ± 20%
C221	DK1710301	Ceramic, 0.01μF ± 20%
C222	DK1840302	Ceramic, 0.04μF +80%, -20%
C223	DK1710301	Ceramic, 0.01μF ± 20%
C224	DK1710301	Ceramic, 0.01μF ± 20%
C225	DD1620101	Ceramic, 200PF ± 10%
C226	DK1710301	Ceramic, 0.01μF ± 20%
C227	DK1710301	Ceramic, 0.01μF ± 20%
C228	DK1840301	Ceramic, 0.04μF +80%, -20%
C229	DK1710301	Ceramic, 0.01μF ± 20%
C230	DK1710301	Ceramic, 0.01μF ± 20%
C231	DK1710201	Ceramic, 0.001μF ± 20%
C232	DK1810402	Ceramic, 0.1μF +80%, -20%
C233	DK1710301	Ceramic, 0.01μF ± 20%
C234	DK1710301	Ceramic, 0.01μF ± 20%
C235	DK1840302	Ceramic, 0.04μF +80%, -20%
C236	DK1710301	Ceramic, 0.01μF ± 20%
C237	EA1060169	Electroly, 10μF, 16V
C238	DD1620101	Ceramic, 200PF ± 20%
C239	DD1620101	Ceramic, 200PF ± 20%
C240	EA1070109	Electroly, 100μF, 10V
C241	DD1620101	Ceramic, 200PF ± 20%
C242	EA1070169	Electroly, 100μF, 16V
C243	DK1840302	Ceramic, 0.04μF +80%, -20%
C244	EA1050509	Electroly, 1μF, 50V
C245	EA1060169	Electroly, 10μF, 16V
C246	EA1060169	Electroly, 10μF, 16V

REF. DESIG.	MARANZ PART NO.	DESCRIPTION
C247	DK1710301	Ceramic, 0.01μF ± 20%
C248	DD1540001	Ceramic, 40PF ± 5%
		FILTERS
F201	FF1107004	Ceramic Filter, CFS107M
F202	FF1107004	Ceramic Filter, CFS107M
F203	FF1107004	Ceramic Filter, CFS107M
		SEMICONDUCTORS
H201	HT308291C	Transistor, 2SC829 C
H202	HT308291C	Transistor, 2SC829 C
H203	HT308291C	Transistor, 2SC829 C
H204	HT308291C	Transistor, 2SC829 C
H205	HT308291C	Transistor, 2SC829 C
H206	HT308291C	Transistor, 2SC829 C
H207	HT308291C	Transistor, 2SC829 C
H208	HT306441B	Transistor, 2SC644 S
H210	HD1000105	Diode, 1N60
H211	HD1000105	Diode, 1N60
H212	HD1000105	Diode, 1N60
H213	HD1000105	Diode, 1N60
H214	HD1000105	Diode, 1N60
H215	HD1000105	Diode, 1N60
H216	HD2001105	Diode, 1S1555
H217	HD2001105	Diode, 1S1555
H218	HD1000105	Diode, 1N60
H219	HD1000105	Diode, 1N60
H220	HD2001105	Diode, 1S1555
H221	HD2001105	Diode, 1S1555
H222	HD1000105	Diode, 1N60
H223	HD1000105	Diode, 1N60
H224	HD2001105	Diode, 1S1555
H225	HD2001105	Diode, 1S1555
H226	HD1000105	Diode, 1N60
H227	HD1000105	Diode, 1N60
H228	HD2001105	Diode, 1S1555
H229	HD2001105	Diode, 1S1555
H230	HD1000302	Diode, 20A90M
H231	HD1000302	Diode, 20A90M
		MISCELLANEOUS
L201	LI1401623	IFT, FM
L202	LC1332002	Choke Coil, 3.3μH
J201 ~ J208	YP1000113	Plug
J210 ~ J212	YP1000113	Plug
P300	YD2890003	P.W. Board, FM MPX & Noise DC Amp.
	ZZ2884103	P.W. Board Ass'y
		RESISTORS **All resistors are ± 5% and ¼W, unless otherwise indicated.**
R301	RA0202011	Trimming, 2KΩ (B)
R302	RT0522414	220KΩ
R303	RT0556314	56KΩ
R304	RT0568314	68KΩ
R305	RT0510114	100Ω
R306	RT0518414	180KΩ
R307	RT0522414	220KΩ
R308	RT0512414	120KΩ

REF. DESIG.	MARANZ PART NO.	DESCRIPTION
R309	RT0510414	100KΩ
R310	RT0568214	6.8KΩ
R311	RA0502020	Trimming, 5KΩ (B)
R312	RT0516314	16KΩ
R313	RT0510214	1KΩ
R314	RT0522414	220KΩ
R315	RT0510214	1KΩ
R316	RT0510214	1KΩ
R317	RT0539214	3.9KΩ
R318	RT0539214	3.9KΩ
R319	RT0522414	220KΩ
R320	RT0522314	22KΩ
R321	RT0510114	100Ω
R322	RT0510014	10Ω
R323	RT0522414	220KΩ
R324	RT0522414	220KΩ
R325	RT0530314	30KΩ
R326	RT0530314	30KΩ
R327	RT0510414	100KΩ
R328	RT0510414	100KΩ
R329	RT0515514	1.5MΩ
R330	RT0515514	1.5MΩ
R331	RT0562114	620Ω
R332	RT0562114	620Ω
R333	RT0522314	22KΩ
R334	RT0522314	22KΩ
R335	RT0510114	100Ω
R336	RT0510114	100Ω
R337	RT0582214	8.2KΩ
R338	RT0582214	8.2KΩ
R339	RT0547114	470Ω
R340	RT0547114	470Ω
R341	RT0522414	220KΩ
R342	RT0522414	220KΩ
R343	RT0539214	3.9KΩ
R344	RT0556414	560KΩ
R345	RT0515314	15KΩ
R346	RT0512414	120KΩ
R347	RT0510114	100Ω
R348	RT0522414	220KΩ
R349	RT0556214	5.6KΩ
R350	RT0510314	10KΩ
R351	RT0568214	6.8KΩ
R352	RT0533314	33KΩ
R353	RT0510114	100Ω
R354	RT0510414	100KΩ
R355	RT0527314	27KΩ
R356	RT0510414	100KΩ
R357	RT0510214	1KΩ
R358	RT0510114	100Ω
R359	RT0527314	27KΩ
R360	RT0533314	33KΩ
R361	RT0522414	220KΩ
R362	RA0104018	Trimming, 100KΩ (B)
R363	RA0103025	Trimming, 10KΩ (B)
R364	RT0522214	2.2KΩ
R365	RT0510114	100Ω
R366	RT0510314	10KΩ
R367	RT0510114	100Ω
R368	RT0527414	270KΩ
R369	RT0515314	15KΩ
R370	RT0512314	12KΩ

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R371	RT0522114	220Ω
R372	RT0527414	270KΩ
R373	RT0533314	33KΩ
R374	RA0103025	Trimming, 10KΩ (B)
R375	RT0510114	100Ω
R376	RT0510414	100KΩ
R377	RT0510414	100KΩ
R378	RT0556214	5.6KΩ
R379	RT0522214	2.2KΩ
		CAPACITORS
C301	DF1622205	Film, 2200PF ± 10%
C302	EA3360109	Electroly, 33μF, 10V
C303	DF1722305	Film, 0.022μF ± 20%
C304	EA1060169	Electroly, 10μF, 16V
C305	DF5547101	Film, 470PF ± 5%
C306	EA1060169	Electroly, 10μF, 16V
C307	EQ4740501	Electroly, 0.47μF ± 20%, 35V
C308	EQ2240501	Electroly, 0.22μF ± 20%, 35V
C309	EQ2240501	Electroly, 0.22μF ± 20%, 35V
C310	DF1747301	Film, 0.047μF ± 20%, 35V
C311	DF1515205	Film, 1500PF ± 5%
C312	DF1515205	Film, 1500PF ± 5%
C313	DD1536101	Ceramic, 360PF ± 5%
C314	DD1536101	Ceramic, 360PF ± 5%
C315	DF1533205	Film, 3300PF ± 5%
C316	DF1533205	Film, 3300PF ± 5%
C317	DF1515205	Film, 1500PF ± 5%
C318	DF1515205	Film, 1500PF ± 5%
C319	DF1522205	Film, 2200PF ± 5%
C320	DF1522205	Film, 2200PF ± 5%
C321	DF5532201	Film, 3200PF ± 3%
C322	DF5532201	Film, 3200PF ± 3%
C323	EV2240351	Electroly, 0.22μF ± 20%, 35V
C324	EV2240351	Electroly, 0.22μF ± 20%, 35V
C325	EV1050352	Electroly, 1μF ± 20%, 35V
C326	EV1050352	Electroly, 1μF ± 20%, 35V
C327	EA2270259	Electroly, 220μF, 25V
C328	EA2270169	Electroly, 220μF, 16V
C329	EA1060169	Electroly, 10μF, 16V
C330	DK1840302	Ceramic, 0.04μF +80%, -20%
C331	EA1050509	Electroly, 1μF, 50V
C332	EA1060169	Electroly, 10μF, 16V
C333	DD1615001	Ceramic, 15PF ± 10%
C334	DF1668301	Film, 0.068μF ± 10%
C335	DF1740301	Film, 0.04μF ± 20%
C336	DK1810402	Ceramic, 0.1μF +80%, -20%
C337	EA4750359	Electroly, 4.7μF, 35V
C338	EA1050509	Electroly, 1μF, 50V
C339	DK1840302	Ceramic, 0.04μF +80%, -20%
C340	DK1840302	Ceramic, 0.04μF +80%, -20%
C341	DK1840302	Ceramic, 0.04μF +80%, -20%
		SEMICONDUCTORS
H301	HF200342C	FET, 2SK34C, D
H302	HT308281D	Transistor, 2SC828S
H303	HT308281D	Transistor, 2SC828S
H304	HT307322A	Transistor, 2SC732 B or G
H305	HT307322A	Transistor, 2SC732 B or G
H306	HT104942A	Transistor, 2SA494 G or Y
H307	HT104942A	Transistor, 2SA494 G or Y
H308	HT308281D	Transistor, 2SC828S
H309	HT308281D	Transistor, 2SC828S
H310	HT308281D	Transistor, 2SC828S

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
H311	HT308281D	Transistor, 2SC828S
H312	HF200300A	FET 2SK30A
H313	HT308281D	Transistor, 2SC828S
H314	HT308281D	Transistor, 2SC828S
H315	HT308281D	Transistor, 2SC828S
H316	HT308281D	Transistor, 2SC828S
H317	HT308281D	Transistor, 2SC828S
H318	HD1000105	Diode, 1N60
H319	HD1000105	Diode, 1N60
H320	HD2001105	Diode, 1S1555
H321	HC1000401	IC, IC. HA1156
		COILS
L301	LS1029004	MPX Coil, 56mH
L302	LS1029004	MPX Coil, 56mH
L303	LS1029005	MPX Coil, 43mH
L304	LS1029005	MPX Coil, 43mH
L305	LC2105001	Choke Coil, 1mH
		MISCELLANEOUS
J301 ~ J317	YP1000113	Plug
J322	YP1000113	Plug
P400	YD2884005 ZZ2884005	P.W. Board, Power Supply P.W. Board Ass'y
		RESISTORS
R401	RC1033212	3.3KΩ ± 10%, ½W
R402	RC1012012	12Ω ± 10%, ½W
R403	RC1027112	270Ω ± 10%, ½W
R404	RC1015312	15KΩ ± 10%, ½W
R405	RC1033312	33KΩ ± 10%, ½W
R406	RC1012012	12Ω ± 10%, ½W
R407	RC1015212	1.5KΩ ± 10%, ½W
R408	GS1010105	100Ω ± 10%, 5W
R409	RC1047112	470Ω ± 10%, ½W
R413	RT0539114	390Ω ± 5%, ¼W
R414	RT0539114	390Ω ± 5%, ¼W
R415	RT0510514	1MΩ ± 5%, ¼W
R416	RT0510514	1MΩ ± 5%, ¼W
R417	RT0510514	1MΩ ± 5%, ¼W
R418	RT0510514	1MΩ ± 5%, ¼W
R419	RT0515114	150Ω ± 5%, ¼W
R420	RT0515114	150Ω ± 5%, ¼W
R421	RT0510314	10KΩ ± 5%, ¼W
R422	RT0510314	10KΩ ± 5%, ¼W
R423	RT0510414	100KΩ ± 5%, ¼W
R424	RT0510414	100KΩ ± 5%, ¼W
		CAPACITORS
C401	DK1810351	Ceramic, 0.01μF +100%
C402	DK1810351	Ceramic, 0.01μF +100%
C403	EA3370509	Electroly, 330μF, 50V
C404	EA3370509	Electroly, 330μF, 50V
C405	EA1070259	Electroly, 100μF, 25V
C406	EA1070259	Electroly, 100μF, 25V
C407	EA4760509	Electroly, 47μF, 50V
C408	EA4760509	Electroly, 47μF, 50V
C409	EV1050352	Electroly, 1μF, 35V
C410	EV1050352	Electroly, 1μF, 35V
C411	EV1050352	Electroly, 1μF, 35V
C412	EV1050352	Electroly, 1μF, 35V

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
C413	EA1070359	Electroly, 100μF, 35V
		SEMICONDUCTORS
H401	HT313441E	Transistor, 2SC1344 (E)
H402	HT313441E	Transistor, 2SC1344 (E)
H403	HT312132A	Transistor, 2SC1213A (B), (C
H404	HD3003209	Diode, CZ-142
H405	HD2000501	Diode, W06B
H406	HD2000501	Diode, W06B
H407	HT403154A	Transistor, 2SD315 (C, D, E, F)
		MISCELLANEOUS
T401	273026702	Heat Sink
J401 ~ J413	YP1000113	Plug
0403	288416050	Bracket K
0422	288426251	Pulley K
0506	288416003	Bracket
0507	288416004	Bracket
0513	288420101	Partitioner
0520	288410901	Shield
0703	51100306A	B.H.M. Screw x 4
0704	51100306A	B.H.M. Screw x 2
0706	51102606A	B.H.M. Screw x 2
0707	51042606S	F.H.M. Screw x 2
0711	51042606S	F.H.M. Screw x 4
0712	53112603E	Hexagon Nut x 2
0713	54022601E	Flat Washer P x 2
0726	51100306A	B.H.M. Screw x 2
0728	51100306A	B.H.M. Screw x 2
0730	51100406A	B.H.M. Screw x 6
0731	51570306B	P.H. Tapt Screw x 2
1122	288210901	Shield
0628	257710602	Bearing
0629	141511801	Spacer
0631	51040306A	F.H.M. Screw x 2
0409	288405150	Guide K
0412	257726201	Pulley
0413	64002400R	R.G. Ring E
0715	51042604A	F.H.M. Screw x 2
0415	288426250	Pulley K
0514	281810107	Support
0502	288427402	Reflector
0503	288427103	Holder
J010	YJ0800013	Socket
J011	YJ0800013	Socket
M003	IN1008007	Lamp
M004	IN1008007	Lamp
0708	51570306B	P.H. Tapt Screw x 2

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0709	51100306A	B.H.M. Screw
M001	IM1104202	DC Meter, Tuning
M002	IM1104210	DC Meter, Signal
0429	288427401	Reflector
0430	288427101	Holder
0431	288427102	Holder
0717	51570306B	P.H. Tapt Screw x 3
0718	51100306A	B.H.M. Screw x 2
0720	51480306A	B.H.M. Screw x 2
0722	51570306B	P.H. Tapt Screw x 2
PZ01	YD2884003 ZZ2884003	P.W. Board, Dial Lamp P.W. Board Ass'y
		MISCELLANEOUS
MZ01	IN1008007	Lamp, Dial Illumi.
MZ02	IN1008007	Lamp, Dial Illumi.
MZ03	IN1008007	Lamp, Dial Illumi.
MZ04	IN1008007	Lamp, Dial Illumi.
MZ05	IN1008007	Lamp, Dial Illumi.
JZ01 ~ JZ04	YP1000113	Plug
JZ05 ~ JZ14	YJ0800017	Socket
PY01	YD2884004 ZZ2884004	P.W. Board, Selector Lamp P.W. Board Ass'y
		MISCELLANEOUS
MY01	IN1012011	Lamp, Stereo
MY02	IN1006301	Lamp, Muting
MY03	IN1006301	Lamp, FM
MY04	IN1006301	Lamp, AM
MY05	IN1006301	Lamp, Hi Blend
MY06	IN1006301	Lamp, Mono
JY01 ~ JY09	YP1000113	Plug
R005	RM0104008	Variable Resist., 100KB x 2, Output
R004	RK0203029	Variable Resist., 20KB, Muting
PS01	YD2884001 ZZ2884001	P.W. Board, Selector Push Switch P.W. Board Ass'y
		MISCELLANEOUS
RS01	RT0556114	Resistor, 560Ω ± 5%, ¼W
RS02	RT0556114	Resistor, 560Ω ± 5%, ¼W
RS03	RC1002212	Resistor, 2.2Ω ± 5%, ½W
RS05	RC1002212	Resistor, 2.2Ω ± 10%, ½W
CS01	EA3360109	Electroly Cap., 33μF, 10V
SS01	SP0603004	Push Switch, MUT-FM-AM

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
PT01	YD2884002 ZZ2884002	P.W. Board, Mono Push Switch P.W. Board Ass'y
		MISCELLANEOUS
RT01	RC1002212	Resistor, 2.2Ω ± 10%, ½W
RT02	RC1002212	Resistor, 2.2Ω ± 10%, ½W
CT01	DF1622301	Film Cap., 0.022μF ± 10%
ST01	SP0402006	Push Switch, HIBLEND-MONO
S002	SP0201010	Push Switch
S002	SP0101010	Push Switch, For CANADA
0819	145525903	Bush x 2
0829	257816010	Bracket
0830	257816011	Bracket
1307	62031650W	Lug x 2
J001	YT0304002	Terminal, Ant.
J007	YJ0800012	Socket, Fuse Holder
J009	YT0101003	Terminal, Ground
0903	51100308S	B.H.M. Screw x 2
0904	53110303E	Hexagon Nut x 2
0906	51100308S	B.H.M. Screw x 4
0907	53110303E	Hexagon Nut x 4
0916	51100306S	B.H.M. Screw x 2
0917	62031650W	Lug
0920	51100306S	B.H.M. Screw x 4
0934	51100306S	B.H.M. Screw x 3
0935	54040302N	Spring Washer x 3
0924	62041760W	Lug
0926	54050400R	T.L. Washer OR
L002	BF1040001	Balun Coil
G001	BF1040001	Printed Compo.
R009	GT0522512	Resistor, 2.2MΩ ± 5%, ½W
W001	YC0240010	AC Cord
0811	257816052	Bracket K
0816	281927103	Holder
0929	51100310S	B.H.M. Screw x 2
0930	53110303E	Hexagon Nut x 2
0931	51100308S	B.H.M. Screw x 2
0932	53110303E	Hexagon Nut x 2
0933	54050300R	T.L. Washer OR x 2
L001	LF1120023	Ant. Coil, AM
R001	RC1068012	Resistor, 680Ω ± 10%, ½W
R002	RC1068012	Resistor, 680Ω ± 10%, ½W
R003	RC1008212	Resistor, 8.2Ω ± 10%, ½W
S001	SS0202017	Slide Switch, FM Ant. Att.
J004	YT0201006	Terminal, Quadradial Output
J005	YT0202007	Terminal, Output
1134	138200503	Clamper x 5
J003	YL0107005	Terminal, 7P

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
R008	RC1039012	Resistor, 39Ω ± 10%, ½W
C001	DK1710301	Ceramic Cap., 0.01μF ± 20%
L004	LC1332002	Choke Coil
0510	288430201	Dial
0434	288410701	Sheet
W002	YX2884001	Wire Materials
W003	YW2884001	Wire Materials
0126	275905701	Leg x 4
0313	51490410S	B.H.M. Screw FS x 4
1103	285210550	Chassis K
1114	282610102	Support
1124	380210102	Support x 2
1125	288710903	Shield
1127	288410903	Shield
1128	288410904	Shield
1133	273025901	Bush x 3
3536	138200503	Clamper x 3
3537	62031650W	Lug x 2
1203	51570306B	P.H. Tapt Screw x 2
1204	51100306E	P.H.M. Screw x 4
1206	51570306B	P.H. Tapt Screw x 4
1207	51100306S	B.H.M. Screw x 4
1209	51570408B	P.H. Tapt Screw x 2
1210	54020401E	Flat Washer P x 2
1211	54040402N	Spring Washer x 2
1218	51100306S	B.H.M. Screw x 5
1219	51100306S	B.H.M. Screw x 2
1220	51570306B	P.H. Tapt Screw x 4
1221	51100306E	P.H. Tapt Screw x 5
1222	51100306S	P.H. Tapt Screw x 3
1223	288405302	Cap x 3
1225	59030805P	Fiver Washer
1226	59030810P	Fiver Washer x 4
1228	51570306B	P.H. Tapt Screw x 4
1229	51100306S	B.H.M. Screw x 2
1230	54040302N	Spring Washer x 2
1231	51570306B	P.H. Tapt Screw x 4
1302	51570306B	P.H. Tapt Screw x 5
1303	51570306B	P.H. Tapt Screw x 7
1305	54050300R	T.L. Washer OR x 5
1311	54020301S	Flat Washer
R007	RK0503009	Variable Resist., 50KΩ (B)
L005	TS1600905	Power Transf., 120V
F001	FS1005009	Fuse, 250V, 0.5A, UL
0110	281815402	Knob
0111	281815401	Knob x 5
0112	282815401	Knob x 2
0116	288425701	Lid

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
0117	257711803	Spacer x 4
0121	282625702	Lid
0130	145512001	Insulator
0132	288406450	Case K
0202	288426501	Indicator
0203	288426502	Indicator, For CANADA
0919	51100306S	B.H.M. Screw x 2
0211	257886101	Label, UL Caution
0212	257886102	Label, Do not Remove Cover.
0213	257886103	Label, See marking . . . . .
0214	250626506	Indicator, Do not use as . . . . .
0219	282186101	Label, LL24902, For CANADA
0220	282186102	Label, Fuse Caution, For CANADA
0231	951022101	Label, For CANADA
0232	285226508	Indicator, For CANADA
0303	52017039J	H. Head Bolt x 4
0305	51100406S	B.H.M. Screw x 8
0309	51480406S	B.H.M. Screw F x 4
0317	52010420A	H. Head Bolt x 4, For CANADA
0318	54080400R	T.L. Washer R R x 4, For CANADA
0427	282626901	Protector
0516	281912004	Insulator
0517	288400701	Strip
0518	287105302	Cover x 2
0521	288411801	Spacer
0534	56382540G	Eyelet
0607	285011202	Shaft
0608	54040402N	Spring Washer
0616	281810650	Bearing K
0620	51640410D	Set Screw C.R.
0621	54040402N	Spring Washer
0622	53110403E	Hexagon Nut
0624	51100306A	B.H.M. Screw x 2
0625	54050300R	T.L. Washer OR x 2
0724	51100306S	B.H.M. Screw x 2
1522	952281501	Serial NO Card x 4
1523	952301512	Serial NO Card x 4, For CANADA
1402	288485101	Instructions
1409	288485601	Schematic Diagram
1417	281885104	Instructions
1418	288785108	Instructions
1419	288785109	Instructions, For CANADA
1420	282685107	Instructions
1423	257785450	Guarantee Card K

REF. DESIG.	MARANTZ PART NO.	DESCRIPTION
1502	288480103	Packing Case
1503	288480104	Packing Case
1505	288480102	Packing Case, For CANADA
1506	288480112	Packing Case, For CANADA
1508	288480301	Partitioner x 2
1510	285280303	Partitioner x 2, For CANADA
1512	901433533	Polyethylen Bag
1513	901453535	Polyethylen Bag, For CANADA
1514	901302501	Polyethylen Bag x 2
1517	102980401	Sleeve
1519	273182101	Silicagel x 2
1520	281905601	Buffer
1513	ZA0200007	Ext. Antenna, FM
1533	ZD0120006	Connective Cord

8. TECHNICAL SPECIFICATIONS

FM SECTION:

Tuning Frequency Range	88–108MHz
IHFM Usable Sensitivity	2.3μV
IHFM Selectivity	60dB
Capture Ratio	1.6dB
Image Rejection Ratio at 106MHz	70dB
Signal to Noise Ratio (Mono)	70dB
Signal to Noise Ratio (Stereo)	60dB
Total Harmonic Distortion (Mono)	0.15%
Total Harmonic Distortion (Stereo)	0.3%
Frequency Response (ref. 75μ sec. de-emphasis)	±1dB, 30Hz–15KHz
Stereo Separation at 1KHz	42dB

AM SECTION:

Tuning Frequency Range	540–1605KHz
Usable Sensitivity	20μV
Selectivity	26dB
Image Rejection Ratio	70dB
Signal to Noise Ratio	46dB
Frequency Response, –3dB down	50Hz–4KHz
Total Harmonic Distortion	1%

GENERAL:

Power Requirements		120V AC 50 to 60Hz
Power Consumption		25 Watts
Dimensions	Panel Width	15-3/8
	Panel Height	5-3/4
	Depth	11-13/16
Weight	Unit alone	17.2 lbs
	Packed for Shipment	23.8 lbs

*These specifications and exterior designs may be changed for improvement without advance notice.